parts of the State. Oklahoma noted light dust in the Panhandle on the 9th.

In Montana light dust was reported on the 2d, 8th, 22d, 29th, and 30th. The storms of the 22d in north-central counties were the most extensive.

December.—During December duststorms were reported from Montana eastward to portions of Illinois and southward to Texas. In Illinois light dust was observed on the 12th–13th, 14th, and 28th. The storms were all light in character, and of short duration.

In the upper Mississippi Valley light storms were reported in Minnesota on the 11th, 12th, and 16th, while in Iowa a heavy duststorm carried by a 40-mile wind resulted in sharply reduced visibilities and considerable discomfort. Light dust was observed in western Missouri on the 1st, 2d, and 12th.

South Dakota, because of deficient moisture and high winds, experienced soil blowing in all sections on the 1st, 11th–12th, and 15th–16th. In Nebraska a severe duststorm occurred at Valentine on the 12th, with lowest visibility about one-fourth mile for about one-half hour.

In Kansas dusty conditions were observed on the 1st, 11th, 12th, and 18th, and on the same days dust was reported in western Oklahoma with visibility reduced to less than 1 mile in the panhandle sections on 2 or more days. Light dust was reported in Texas on the 1st, 2d, 3d, 12th, 18th, and 19th, and in Montana, particularly in northern districts, on the 6th, 11th, 14th, and 15th.

NORTH ATLANTIC TROPICAL CYCLONES OF 1939

By WILLIS E. HURD

Five tropical cyclones occurred in the North Atlantic Ocean, including the Gulf of Mexico and the Caribbean Sea, during the hurricane season of 1939. A synopsis of some of their more important features is given in the table herewith. Their tracks, numbered I to V chronologically, are shown on the accompanying chart. The average annual number of tropical cyclones occurring during the past 53 years is about 7, 1939 thus showing a deficiency of 2.

In 1939 there was only one major hurricane, that of October 12–18 (IV). This expended its energy at sea, but passed so close to Bermuda in its north-northeastward course as to be damaging to the islands. Another storm, that of October 29–November 8 (V), may be classed as a hurricane, although winds of full hurricane force were reported on only 1 day, October 30, while crossing Grand Cayman Island. A week later, in higher latitudes, one ship reported a gale of force 11. The other 3 cyclones had known locally highest winds not in excess of force 9 or 10. In chronological occurrence, there was 1 tropical cyclone each in June, August, September, and October, and 1 in October–November.

The hurricane of October 12–18 was the only one of the 5 disturbances to attain great barometric depth. On the 14th its lowest reported minimum was 941.4 millibars (27.80 inches), but on the 17th and 18th pressures were noted almost down to 948 millibars (28 inches). Two of the cyclones were shallow, and lowest barometers did not fall as low as 999 millibars (29.50 inches).

Of the cyclones, 2 (I and III) were associated almost wholly with the Gulf of Mexico; 1 (V) originated in the Caribbean Sea, where it remained for a week, then crossed eastern Cuba and, so far as can be determined from meager ship's reports in the western Atlantic, held to a northeastward course as far as Newfoundland; 2 (II and IV) originated over or in the vicinity of the Leeward Islands, 1 keeping a northwesterly course across Florida, then recurving up the eastern United States, the other remaining at sea until it crossed southeastern Newfoundland.

Two storms of the year took abnormal directions during a part of their tracks. That of June (I), described a rare left-handed loop in the northern part of the Gulf of Mexico; that of October–November (V) performed an unusual curve from northwesterly through north into easterly then northeasterly while in tropical waters.

Only 5 or 6 lives are known to have been lost directly or indirectly due to these tropical cyclones. Economically, the year's losses from them were comparatively small. No estimates of property losses are available for the three storms (II, IV, and V) that caused some damage. (See under "Remarks" in the table.)

North Atlantic tropical cyclones of 1939

[Synopsis of tropical cyclones of 1939 (number of storm in table corresponds to number of track on accompanying chart)]

Storm	Date	Place where first reported	Coast lines crossed	Maximum wind velocity reported	Lowest barometer reported	Place of dissipation	Intensity	Remarks
I	June 12–16	Gulf of Honduras	Yucatan, Alabama.	Force 9, southeast S. S. *Alabama.*	1,000.3 millibars (29.54 inches) S. S. *Kofresi.*	Tennessee	Not of hurricane intensity.	1 person drowned (A).
II	Aug. 8–20	Northeast of Puerto Rico.	Florida, Alabama.	Force 10, east, S. S. *Pan Amoco;* 62 miles Tampa Airport.	988.5 millibars (29.19 inches) St. Andrews, Fla.	Southeastern New York.	do	1 person drowned. Some damage from wind, heavy rains and floods (B).
III	Sept. 24–26.[1]	Northwest of Yucatan.	Louisiana	Force 9, north-northeast, M. S. *Cubahama.*	1,003.7 millibars (29.64 inches) M. S. *Cubahama.*	Mississippi and Alabama.	do	(C.)
IV	Oct. 12–18.[2]	Leeward Islands	None	Force 12, by several ships and by Bermuda.	941.4 millibars (27.80 inches) S. S. *F. W. Abrams.*	East of Newfoundland.	Intense hurricane	Some damage at Bermuda and to ships at sea; 1 life lost at sea (D).
V	Oct. 29–Nov. 8.[3]	Western Caribbean Sea.	Cuba, Newfoundland.	92 miles at Grand Cayman Island.	989.0 millibars (29.21 inches) ship at sea.	East of Labrador	Hurricane on 1 day; of force 11 on 2 others.	Definite loss of 2 lives; property damage in the Cayman Islands Jamaica, and Cuba; 4 schooners lost in the Caymans (E).

Complete reports of these cyclones may be found in the MONTHLY WEATHER REVIEW: (A) June 1939; 67: 175, 176. (B) August 1939; 67: 296, 297. (C) September 1939; 67: 340. (D) October 1939: 67: 382, 383. (E) November 1939; 67: 416.

[1] There was squally weather in the extreme southwestern part of the Gulf of Mexico on the 22d to early 24th, and unsettled weather in the northwestern Caribbean on the 23d, but no definite cyclonic circulation could be charted until 7 p. m. (eastern standard time) of the 24th.

[2] Unsettled weather and slightly depressed barometer occurred to the eastward of the Antilles as early as the 9th, but no cyclonic center could be established prior to the 12th.

[3] Disturbed weather occurred in the southwestern Caribbean on October 27, but no cyclonic circulation was defined until the 29th. The dashed part of track V indicates that the course of the storm is approximated, due to lack of ship reports. Late information received from the meteorological office, Kingston, Jamaica, shows that, on November 2, at 7 a. m., Negril Point had a barometer of 1,000 millibars (29.53 inches), with a west-northwest wind of 60 miles, and heavy sea; at 9 a. m. Kempshot had a barometer of 992.6 millibars (29.31 inches), with a wind velocity of about 70 miles from southwest.

Paths of Hurricanes and Other Tropical Storms of 1939